Space Weather Forecast

Issued on Saturday 8 March 2025 at 00:25 Local

This forecast provides a four-day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales

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Space Weather Forecast Headline: Chance of Moderate class flares (Minor-Moderate radio blackouts) throughout. Minor/Moderate geomagnetic storm (G1/G2) likely Days 1/2.

Analysis of Space Weather Activity over past 24 hours

Solar Activity: Solar activity has been Low with occasional low level Common-class activity in the past 24 hours.

There are currently up to seven sunspot regions on the visible solar disc. A moderately large bipolar group in the south centre disc is the most significant region but is showing decay in its intermediate and trailer spots in recent imager. The second largest region is located toward the southeast limb, and consists of a moderately large lead spot with some recently emerged small trailer spots. A new single unipolar spot is now visible at the northeast limb. Remaining spot groups are small and either stable or in decay.

A small filament that lifted-off to the south of the largest spot group around 07/0100UTC produced a CME (coronal mass ejection). However, available imagery and initial modelling suggests a strong southerly component, and this is not expected to have any significant impact at Earth. A CME may have occurred in association with the M1.6 flare at 07/2100UTC from AR4016, but relevant coronagraph imagery is currently being awaited to determine if this has an earth-directed component.

Solar Wind / Geomagnetic Activity: Solar winds were fairly steady at slightly elevated levels. The Interplanetary Magnetic Field was mainly Weak, and the north-south component was largely Weak and variable. Geomagnetic activity was Quiet (Kp 0-2), as observed by BGS.

Energetic Particles / Solar Radiation: No solar radiation storms were observed.

Four-Day Space Weather Forecast Summary

Solar Activity: Solar activity is expected to be generally Low, with a chance of further isolated Moderate class flares.

Solar Wind / Geomagnetic Activity: There are currently no Earth-directed CMEs in the forecast. Background solar winds are expected at first. During Day 1 (8 March) Earth is likely to connect with the High Speed Stream from CH21/-. Solar wind speeds are expected to increase to Elevated to Strong. Geomagnetic activity is expected to be Quiet to Unsettled (Kp 1-3) initially on Day 1 (8

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March). However, later on Day 1 (8 March) and during Day 2 (9 March) periods of Active to G1/minor geomagnetic storm (Kp 4-5) are likely with a chance of isolated G2/Moderate geomagnetic storms (Kp 6). On Day 4 (10 March), periods of Unsettled to Active are likely with a chance of G1/minor geomagnetic storm (Kp 4-5).

Energetic Particles / Solar Radiation: No solar radiation storms are expected.

Geomagnetic Storms

Geomagnetic Storm Probability (Exceedance)	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Minor or Moderate	G1 to G2	No	60	70	40	30
Strong	G3	No	10	10	5	1
Severe	G4	No	1	1	1	1
Extreme	G5	No	1	1	1	1

Radio Blackouts - X-Ray Flares

X-Ray Flares Probability	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	R1-R2 (M Class)	No	40	40	40	40
Very Active	R3-R5 (X Class)	No	5	5	5	5

Solar Radiation Storms (High Energy Protons)

Radiation Storms Probability (Exceedance)	Level ($cm^{-2}sr^{-1}s^{-1}$)	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	≥ S1	No	5	5	5	5
Very Active	≥ S3 *	No	1	1	1	1
* S3 ≥ 10 MeV ≥ 1000 pfu and/or 50 MeV ≥ 10pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$)						

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